

WHAT IS CLAIMED IS:

1. A method for sampling and analyzing a selected area of a semiconductor wafer, the method comprising:
 - isolating a portion of a wafer;
 - dispensing a liquid onto the isolated portion of the wafer;
 - removing at least a portion of the liquid; and
 - analyzing the liquid.
2. The method of Claim 1 wherein the act of isolating forms a seal between the wafer and an end of a tube.
3. The method of Claim 1 wherein dispensing a liquid is through a tube.
4. The method of Claim 1 further comprising the act of dissolving a portion of the wafer with the liquid.
5. The method of Claim 1, wherein the act of removing removes contamination on the isolated portion of the wafer.
6. The method of Claim 1 further comprising etching a portion of the wafer with the liquid.
7. The method of Claim 6, wherein the act of etching partially dissolves a substance within the isolated portion of the wafer.
8. A method for selectively analyzing a wafer surface, the method comprising:
 - using a liquid to obtain a sample from an isolated portion of a wafer; and
 - analyzing the sample.
9. The method of Claim 8 wherein the act of obtaining a sample pumps the sample to a nebulizer.
10. The method of Claim 8 wherein the act of obtaining a sample peristaltically pumps the sample to a nebulizer.
11. A method for evaluating a selected section of a wafer, the method comprising:
 - dispensing a liquid onto a selected section of a wafer; and
 - peristaltically pumping a portion of the liquid from the selected section of the wafer.
12. The method of Claim 11 further comprising analyzing the liquid.

13. The method of Claim 11 wherein the act of dispensing seals the liquid within the selected section of the wafer.

14. The method of Claim 11 wherein the act of peristaltically pumping transfers the liquid to a nebulizer.

15. A method for evaluating an isolated section of a wafer, the method comprising:

dispensing an etchant onto an isolated section of a wafer;

transferring a portion of the etchant from the isolated section of the wafer; and

analyzing the etchant as a function of time.

16. The method of Claim 15 wherein the act of analyzing the liquid as a function of time determines the composition of the isolated section of the wafer at different depths within the wafer.

17. The method of Claim 15 further comprising the act of analyzing the etchant after a first time period to evaluate the composition of the wafer at a first depth.

18. The method of Claim 15 further comprising the act of analyzing the etchant after a second time period to evaluate the composition of the wafer at a second depth.

19. A method for analyzing a material selectively removed from a portion of a wafer, the method comprising:

forming a seal between a portion of a sampling apparatus and a portion of a wafer, thereby isolating a portion of the wafer;

dispensing a liquid onto the isolated portion of the wafer;

removing part of the liquid from the isolated area to form a sample; and

analyzing the sample.

20. The method of Claim 19, wherein the liquid comprises an etching solution.

21. The method of Claim 19, wherein the liquid comprises one of the group of water, HF or H₂O₂.

22. The method of Claim 19, wherein the liquid comprises water, HF and H₂O₂.

23. The method of Claim 19, wherein the liquid comprises water, HF and H₂O₂ in a weight ratio of approximately 100:1:1.

24. The method of Claim 19, wherein the act of removing suctions the liquid from the isolated portion of the wafer.

25. The method of Claim 19, wherein the act of removing transfers the liquid from the sampling apparatus.

26. A sampling apparatus for selectively evaluating portions of a wafer, the apparatus comprising:

a first tube that is configured to isolate a portion of a wafer;

a second tube that is configured to dispense a liquid onto the isolated portion of the wafer; and

transfer tubing that is configured to transfer a portion of the liquid to an analyzer.

27. The sampling apparatus of Claim 26, wherein the first tube surrounds the second tube.

28. The sampling apparatus of Claim 26, wherein the liquid comprises an etchant.

29. The sampling apparatus of Claim 26, wherein the transfer tubing is connected to the first tube.

30. The sampling apparatus of Claim 26 further comprising a nebulizer that is in communication with the transfer tubing.

31. The sampling apparatus of Claim 26, wherein the analyzer is an inductively coupled plasma-optical emissions spectrometer.

32. The sampling apparatus of Claim 26, wherein the analyzer is configured to evaluate the liquid as a function of time.

33. The sampling apparatus of Claim 26, wherein the analyzer is configured to evaluate the composition of the isolated portion of the wafer at different depths.

34. A test system that evaluates isolated portions of a semiconductor wafer, the testing system comprising:

a sampling apparatus that is configured to dispense a liquid onto an isolated section of a wafer, the sampling apparatus further comprising:

an outer tube that forms a seal between the outer tube and the isolated section of the wafer; and

an inner tube within the outer tube, the inner tube configured to dispense a liquid within the isolated section of the wafer;

transfer tubing comprising a first end and a second end, the first end connected to the outer tube, the second end connected to an analysis system, the transfer tubing further comprising a flexible outer surface wherein the transfer tubing is configured to transfer a portion of the liquid from the sampling apparatus to the analysis system; and

a peristaltic pump in communication with a portion of the flexible outer surface of the transfer tubing, the peristaltic pump configured to direct the liquid in the transfer tubing to the analysis system.

35. The test system of Claim 34, wherein the outer tube is configured to apply the liquid to the isolated section of the wafer.

36. The test system of Claim 34, wherein the transfer tubing is PTFE tubing.

37. The test system of Claim 34, wherein the analysis system comprises a spectrometer.

38. The test system of Claim 34, wherein the analysis system comprises an inductively coupled plasma mass spectrometer.

39. The test system of Claim 34, wherein the analysis system comprises a nebulizer.

40. The test system of Claim 34, wherein the peristaltic pump is configured to apply successive waves to the outer surface of the transfer tubing.

41. A semiconductor testing apparatus comprising:

a sampling apparatus that is configured to dispense a liquid onto an isolated section of a wafer;

transfer tubing in communication with the sampling apparatus, the transfer tubing configured to transfer a portion of the liquid from the sampling apparatus; and

a peristaltic pump in communication with the transfer tubing, the peristaltic pump configured to direct the liquid in the transfer tubing to an analyzer.

42. The semiconductor testing apparatus of Claim 41, wherein the peristaltic pump does not contaminate the liquid.

43. The semiconductor testing apparatus of Claim 41, wherein the liquid is an etchant.

44. The semiconductor testing apparatus of Claim 41, wherein the sampling apparatus is configured to seal the isolated section of the wafer from other portions of the wafer.

45. The semiconductor testing apparatus of Claim 41, wherein the transfer tubing has a flexible outer surface.

46. The semiconductor testing apparatus of Claim 41, wherein the peristaltic pump applies pressure to the surface of the transfer tubing.

47. The semiconductor testing apparatus of Claim 41 further comprising a nebulizer that is in communication with the transfer tubing and the analyzer.

48. A semiconductor testing apparatus comprising:

a first means for isolating a portion of a wafer, the first means also for dispensing a liquid onto the isolated portion of the wafer;

second means in communication with the first means, the second means for transferring a portion of the liquid to an analysis system; and

third means for transferring the liquid through the second means.

49. The semiconductor testing apparatus of Claim 48, wherein the third means peristaltically pumps the liquid through the second means.

50. The semiconductor testing apparatus of Claim 48, wherein the second means is a tube.

51. The semiconductor testing apparatus of Claim 41, wherein the analysis system comprises a mass spectrometer.

52. The semiconductor testing apparatus of Claim 41, wherein the third means does not contaminate the liquid.